



EXPRESS MAIL NO: EL615485148US

## SEQUENCE LISTING

<110> Itoh, Nobuyuki  
Kavanaugh, W. Michael

<120> HUMAN FGF-23 GENE AND GENE EXPRESSION  
PRODUCTS

<130> PP-17150.001/201130.40901

<140> 09/801,968

<141> 2001-03-07

<160> 46

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 756

<212> DNA

<213> Mus musculus

<400> 1

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aacatttttg	gatcgcttca	cttcagccca	gagaattgca	agttccgcca	gtggacgctg	360
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gccaagcgca	ttttccagcc	gggcaccaac	ccgccgcctt	tctcccagtt	cctgggtcgc	480
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gccgaggacc	cacccgagcg	cgacccactg	aacgtgctca	agccgcggcc	ccgcgccacg	600
cctgtgcctg	tatcctgctc	tcgcgagctg	ccgagcgcag	aggaaggtgg	ccccgcagcc	660
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<211> 251

<212> PRT

<213> Mus musculus

<400> 2

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			20					25					30		
Gly	Ser	Asn	Trp	Gly	Ser	Leu	Thr	His	Leu	Tyr	Thr	Ala	Thr	Ala	Arg

Thr Ser Tyr His Leu Gln Ile His Arg Asp Gly His Val Asp Gly Thr  
 50 55 60  
 Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Thr Ser Glu Asp Ala  
 65 70 75 80  
 Gly Ser Val Val Ile Thr Gly Ala Met Thr Arg Arg Phe Leu Cys Met  
 85 90 95  
 Asp Leu His Gly Asn Ile Phe Gly Ser Leu His Phe Ser Pro Glu Asn  
 100 105 110  
 Cys Lys Phe Arg Gln Trp Thr Leu Glu Asn Gly Tyr Asp Val Tyr Leu  
 115 120 125  
 Ser Gln Lys His His Tyr Leu Val Ser Leu Gly Arg Ala Lys Arg Ile  
 130 135 140  
 Phe Gln Pro Gly Thr Asn Pro Pro Pro Phe Ser Gln Phe Leu Ala Arg  
 145 150 155 160  
 Arg Asn Glu Val Pro Leu Leu His Phe Tyr Thr Val Arg Pro Arg Arg  
 165 170 175  
 His Thr Arg Ser Ala Glu Asp Pro Pro Glu Arg Asp Pro Leu Asn Val  
 180 185 190  
 Leu Lys Pro Arg Pro Arg Ala Thr Pro Val Pro Val Ser Cys Ser Arg  
 195 200 205  
 Glu Leu Pro Ser Ala Glu Glu Gly Gly Pro Ala Ala Ser Asp Pro Leu  
 210 215 220  
 Gly Val Leu Arg Arg Gly Arg Gly Asp Ala Arg Gly Gly Ala Gly Gly  
 225 230 235 240  
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<210> 3  
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 <212> DNA  
 <213> Homo sapiens

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 gtggatggcg caccatca gaccatctac agtgcctga tgatcagatc agaggatgct 240  
 ggctttgtgg tgattacagg tgtgatgagc agaagatacc tctgcatgga ttccagaggc 300  
 aacatttttg gatcacacta ttctgaccog gagaactgca gggtccaaca ccagacgctg 360  
 gaaaacgggt acgacgtcta ccaactctct cagtatcact tcctgggtcag tctgggccgg 420  
 gcgaagagag ctttcctgcc aggcattgaac ccacccccgt actcccagtt cctgtcccgg 480  
 aggaacgaga tccccctaatt tcaattcaac acccccatac cagggcggca caccgggagc 540  
 gccgaggacg actcggagcg ggacccccctg aacgtgctga agccccgggc ccggatgacc 600  
 ccggccccgg cctcctgttc acaggagctc ccgagcgccg aggacaacag cccgatggcc 660  
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 <211> 251  
 <212> PRT  
 <213> Homo sapiens

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 Gly Ser Ser Trp Gly Gly Leu Ile His Leu Tyr Thr Ala Thr Ala Arg  
 35 40 45  
 Asn Ser Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala  
 50 55 60  
 Pro His Gln Thr Ile Tyr Ser Ala Leu Met Ile Arg Ser Glu Asp Ala  
 65 70 75 80  
 Gly Phe Val Val Ile Thr Gly Val Met Ser Arg Arg Tyr Leu Cys Met  
 85 90 95  
 Asp Phe Arg Gly Asn Ile Phe Gly Ser His Tyr Phe Asp Pro Glu Asn  
 100 105 110  
 Cys Arg Phe Gln His Gln Thr Leu Glu Asn Gly Tyr Asp Val Tyr His  
 115 120 125  
 Ser Pro Gln Tyr His Phe Leu Val Ser Leu Gly Arg Ala Lys Arg Ala  
 130 135 140  
 Phe Leu Pro Gly Met Asn Pro Pro Tyr Ser Gln Phe Leu Ser Arg  
 145 150 155 160  
 Arg Asn Glu Ile Pro Leu Ile His Phe Asn Thr Pro Ile Pro Arg Arg  
 165 170 175  
 His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp Pro Leu Asn Val  
 180 185 190  
 Leu Lys Pro Arg Ala Arg Met Thr Pro Ala Pro Ala Ser Cys Ser Gln  
 195 200 205  
 Glu Leu Pro Ser Ala Glu Asp Asn Ser Pro Met Ala Ser Asp Pro Leu  
 210 215 220  
 Gly Val Val Arg Gly Gly Arg Val Asn Thr His Ala Gly Gly Thr Gly  
 225 230 235 240  
 Pro Glu Gly Cys Arg Pro Phe Ala Lys Phe Ile  
 245 250

<210> 5  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sense PCR primer

<400> 5  
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20

<210> 6  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense PCR primer

<400> 6  
 cttccagcga ccctagatga

20

<210> 7  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Sense primer for mouse FGF-23

<400> 7  
 ctgatgatta catcagagga c 21

<210> 8  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense primer for mouse FGF-23

<400> 8  
 caccaggtag tgatgcttct 20

<210> 9  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Antisense primer for mouse FGF-23

<400> 9  
 atccatacaa aggaaccttc g 21

<210> 10  
 <211> 27  
 <212> DNA  
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<220>  
 <223> adaptor primer

<400> 10  
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<210> 11  
 <211> 23  
 <212> DNA  
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<220>  
 <223> adaptor primer

<400> 11  
 actcactata gggctcgagc ggc 23

<210> 12  
 <211> 20  
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<220>  
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<400> 12  
 actcagtgtgt gtgcaatgtgt 20

<210> 13  
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<220>  
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<400> 13  
 gacctagacg aacctgggaa 20

<210> 14  
 <211> 216  
 <212> PRT  
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 1 5 10 15  
 Trp Leu Ala Val Ala Gly Arg Pro Leu Ala Phe Ser Asp Ala Gly Pro  
 20 25 30  
 His Val His Tyr Gly Trp Gly Asp Pro Ile Arg Leu Arg His Leu Tyr  
 35 40 45  
 Thr Ser Gly Pro His Gly Leu Ser Ser Cys Phe Leu Arg Ile Arg Ala  
 50 55 60  
 Asp Gly Val Val Asp Cys Ala Arg Gly Gln Ser Ala His Ser Leu Leu  
 65 70 75 80  
 Glu Ile Lys Ala Val Ala Leu Arg Thr Val Ala Ile Lys Gly Val His  
 85 90 95  
 Ser Val Arg Tyr Leu Cys Met Gly Ala Asp Gly Lys Met Gln Gly Leu  
 100 105 110  
 Leu Gln Tyr Ser Glu Glu Asp Cys Ala Phe Glu Glu Glu Ile Arg Pro  
 115 120 125  
 Asp Gly Tyr Asn Val Tyr Arg Ser Glu Lys His Arg Leu Pro Val Ser  
 130 135 140  
 Leu Ser Ser Ala Lys Gln Arg Gln Leu Tyr Lys Asn Arg Gly Phe Leu  
 145 150 155 160  
 Pro Leu Ser His Phe Leu Pro Met Leu Pro Met Val Pro Glu Glu Pro  
 165 170 175  
 Glu Asp Leu Arg Gly His Leu Glu Ser Asp Met Phe Ser Ser Pro Leu  
 180 185 190  
 Glu Thr Asp Ser Met Asp Pro Phe Gly Leu Val Thr Gly Leu Glu Ala

195 200 205  
Val Arg Ser Pro Ser Phe Glu Lys  
210 215

<210> 15  
<211> 209  
<212> PRT  
<213> Homo sapiens

<400> 15  
Met Asp Ser Asp Glu Thr Gly Phe Glu His Ser Gly Leu Trp Val Ser  
1 5 10 15  
Val Leu Ala Gly Leu Leu Leu Gly Ala Cys Gln Ala His Pro Ile Pro  
20 25 30  
Asp Ser Ser Pro Leu Leu Gln Phe Gly Gly Gln Val Arg Gln Arg Tyr  
35 40 45  
Leu Tyr Thr Asp Asp Ala Gln Thr Glu Ala His Leu Glu Ile Arg  
50 55 60  
Glu Asp Gly Thr Val Gly Gly Ala Ala Asp Gln Ser Pro Glu Ser Leu  
65 70 75 80  
Leu Gln Leu Lys Ala Leu Lys Pro Gly Val Ile Gln Ile Leu Gly Val  
85 90 95  
Lys Thr Ser Arg Phe Leu Cys Gln Arg Pro Asp Gly Ala Leu Tyr Gly  
100 105 110  
Ser Leu His Phe Asp Pro Glu Ala Cys Ser Phe Arg Glu Leu Leu Leu  
115 120 125  
Glu Asp Gly Tyr Asn Val Tyr Gln Ser Glu Ala His Gly Leu Pro Leu  
130 135 140  
His Leu Pro Gly Asn Lys Ser Pro His Arg Asp Pro Ala Pro Arg Gly  
145 150 155 160  
Pro Ala Arg Phe Leu Pro Leu Pro Gly Leu Pro Pro Ala Leu Pro Glu  
165 170 175  
Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly Ser Ser Asp  
180 185 190  
Pro Leu Ser Met Val Gly Pro Ser Gln Gly Arg Ser Pro Ser Tyr Ala  
195 200 205  
Ser

<210> 16  
<211> 10  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Residues which can be incorporated to allow myc  
monoclonal antibody-based affinity purification.

<400> 16  
Glu Gln Lys Leu Ile Ser Glu Glu Asp Leu  
1 5 10

<210> 17  
<211> 5

<212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Preferred thrombin cleavage site.

<400> 17  
 Leu Val Pro Arg Gly  
 1 5

<210> 18  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Residues that bind to paramagnetic streptavidin  
 beads which facilitates purification of molecules.

<400> 18  
 Ser Ala Trp Arg His Pro Gln Phe Gly Gly  
 1 5 10

<210> 19  
 <211> 14  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Oligopeptide used for the production of an  
 antibody to FGF-23 protein. (residues 175-189 of  
 SEQ ID NO:4)

<400> 19  
 Arg Arg His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp  
 1 5 10

<210> 20  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Oligopeptide used for the production of an  
 antibody to FGF-23 protein. (residues 51-67 of  
 SEQ ID NO:4)

<400> 20  
 Tyr His Leu Gln Ile His Lys Asn Gly His Val Asp Gly Ala Pro His  
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 Gln

<210> 21

<211> 13  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> E tag

<400> 21  
 Gly Ala Pro Val Pro Tyr Pro Asp Pro Leu Glu Pro Arg  
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<210> 22  
 <211> 6  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> His6 tag

<400> 22  
 His His His His His His  
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<210> 23  
 <211> 111  
 <212> PRT  
 <213> Homo sapiens

<400> 23  
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 Phe Leu Ser Arg Arg Asn Glu Ile Pro Leu Ile His Phe Asn Thr Pro  
 20 25 30  
 Ile Pro Arg Arg His Thr Arg Ser Ala Glu Asp Asp Ser Glu Arg Asp  
 35 40 45  
 Pro Leu Asn Val Leu Lys Pro Arg Ala Arg Met Thr Pro Ala Pro Ala  
 50 55 60  
 Ser Cys Ser Gln Glu Leu Pro Ser Ala Glu Asp Asn Ser Pro Met Ala  
 65 70 75 80  
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 100 105 110

<210> 24  
 <211> 35  
 <212> PRT  
 <213> Homo sapiens

<400> 24  
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Protein Data Bank



<400> 28

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<213> Homo sapiens
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<210> 30
<211> 78
<212> PRT
<213> Homo sapiens
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<210> 31
<211> 48
<212> PRT
<213> Homo sapiens
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<400> 31  
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Arg Thr Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val

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 Asp Pro Ser Lys Leu Pro Ser Met Ser Arg Asp Leu Phe His Tyr Arg  
           35                      40                      45

<210> 32  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 32  
 Trp Phe Met Ala Phe Thr Arg Gln Gly Arg Pro Arg Gln Ala Ser Arg  
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 Ser Arg Gln Asn Gln Arg Glu Ala His Phe Ile Lys Arg Leu Tyr Gln  
           20                      25                      30  
 Gly Gln Leu Pro Phe Pro Asn His Ala Glu Lys Gln Lys Gln Phe Glu  
           35                      40                      45  
 Phe Val Gly Ser Ala Pro Thr Arg Arg Thr Lys Arg Thr Arg Arg Pro  
           50                      55                      60  
 Gln Pro Leu Thr  
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<210> 33  
 <211> 59  
 <212> PRT  
 <213> Homo sapiens

<400> 33  
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 Thr Arg Glu Asn Gln Gln Asp Val His Phe Met Lys Arg Tyr Pro Lys  
           20                      25                      30  
 Gly Gln Pro Glu Leu Gln Lys Pro Phe Lys Tyr Thr Thr Val Thr Lys  
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 Arg Ser Arg Arg Ile Arg Pro Thr His Pro Ala  
           50                      55

<210> 34  
 <211> 76  
 <212> PRT  
 <213> Homo sapiens

<400> 34  
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 Arg Gly Phe Leu Pro Leu Ser His Phe Leu Pro Met Leu Pro Met Val  
           20                      25                      30  
 Pro Glu Glu Pro Glu Asp Leu Arg Gly His Leu Glu Ser Asp Met Phe  
           35                      40                      45  
 Ser Ser Pro Leu Glu Thr Asp Ser Met Asp Pro Phe Gly Leu Val Thr  
           50                      55                      60  
 Gly Leu Glu Ala Val Arg Ser Pro Ser Phe Glu Lys  
   65                      70                      75

<210> 35

<211> 33  
 <212> PRT  
 <213> Homo sapiens

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 Thr Gly Pro Gly Gln Lys Ala Ile Leu Phe Leu Pro Met Ser Ala Lys  
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 Ser

<210> 36  
 <211> 68  
 <212> PRT  
 <213> Homo sapiens

<400> 36  
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 20 25 30  
 Leu Pro Glu Pro Pro Gly Ile Leu Ala Pro Gln Pro Pro Asp Val Gly  
 35 40 45  
 Ser Ser Asp Pro Leu Ser Met Val Gly Pro Ser Gln Gly Arg Ser Pro  
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 Ser Tyr Ala Ser  
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 <212> PRT  
 <213> Homo sapiens

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 Asp His Arg Asp His Glu Met Val Arg Gln Leu Gln Ser Gly Leu Pro  
 35 40 45  
 Arg Pro Pro Gly Lys Gly Val Gln Pro Arg Arg Arg Arg Gln Lys Gln  
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 Ser Gln Leu Glu Ala Ser Ala His  
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<400> 38

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<400> 42

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 20 25 30  
 Gly His His Thr Thr Glu Gln Ser Leu Arg Phe Glu Phe Leu Asn Tyr  
 35 40 45  
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 Glu Pro Arg  
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 35 40 45

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 Arg Ser Lys Arg His Gln Lys Phe Thr His Phe Leu Pro Arg Pro Val  
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 35 40 45

<210> 45  
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 <213> Homo sapiens

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<210> 46  
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 <212> PRT  
 <213> Artificial Sequence

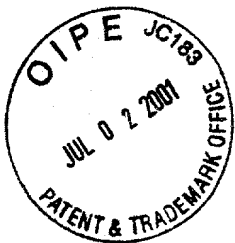
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<223> consensus sequence

<400> 46

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His	Phe	Leu	Pro	Arg	Val										
			20												

Trp Tyr Val Ala Leu Lys Gly Pro Arg Lys Gly Arg Thr Lys Lys Ala  
1 5 10 15  
His Phe Leu Pro Arg Val  
20



EXPRESS MAIL NO. EL615485148US  
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Nobuyuki Itoh and W. Michael. Kavanaugh  
Application No. : 09/801,968  
Filed : March 7, 2001  
For : HUMAN FGF-23 GENE AND GENE EXPRESSION PRODUCTS

Art Unit : 1646  
Docket No. : 201130.40901  
Date : July 2, 2001

Box Missing Parts  
Commissioner for Patents  
Washington, D.C. 20231

DECLARATION

Sir:

I, Monica Steinborn, in accordance with 37 C.F.R. § 1.821(f) do hereby declare that, to the best of my knowledge, the content of the paper entitled "Sequence Listing" and the computer readable copy contained within the floppy disk are the same.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated this 2<sup>nd</sup> day of July, 2001.

Monica Steinborn  
Biotechnology Paralegal

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Seattle, WA 98104-7092  
(206) 622-4900  
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